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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,296	03/22/2004	Jaime A. Rabi	IDX1012C	1836

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EXAMINER	
KRISHNAN, GANAPATHY	

ART UNIT	PAPER NUMBER
1623	

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,296	RABI, JAIME A.	
	Examiner	Art Unit	
	Ganapathy Krishnan	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-20 and 69-85* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-20 and 69-85* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/04;07/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election of Group II, claims 13-20 in the reply filed on 7/21/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). New claims 69-85 that depend from claims elected claims 13 or 17 will be added to Group II for examination.

The applicant has canceled claims 1-12 and 21-68, drawn to non-elected inventions.

Drawings

The drawings are objected to because: In Figure 1, to the right of the arrow the aminopyridine structure shown has three Me groups instead of only two. In Figure 3, at the top left it appears that a pyranose ring has been shown in equilibrium with a furanose ring but it is not clear since the arrows representing the equilibrium is not clear. If applicants intend an equilibrium between the two structures the forward and reverse arrows need to be shown clearly. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-20 and 69-85 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13 and 17, recite in steps (c) and (h) respectively, that the O-alkyl-2-deoxyribose with an acyl halide that generates an anhydrous acid halide. It is not clear what applicants intend by this recitation. An acid halide has the general structure R-C(O)Cl. According to Figure 3 the methoxy group on the ribose is converted to a halide and not an acid halide. For the purpose of prosecution the claims are examined as being drawn to the conversion to a halide. The same recitation is also seen in instant claim 82.

Claims that depend from a rejected base claim that is unclear/indefinite are also rendered unclear/indefinite and are rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13-20 and 68-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gosselin et al (US 6,444,652, '652 patent) in combination with Weis et al (WO 96/13512).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Gosslein et al ('652) teaches the reaction of silylated uracil with a protected ribose sugar in dichloroethane to give the nucleoside 10, which is then deprotected (cols. 25-26, scheme at the bottom half of the page). The ribose sugar that is reacted with the silylated uracil is obtained from L-ribose by treatment of L-ribose with methanol and acid followed by protection of the hydroxyl groups with benzyl chloride in the presence of pyridine (base, acid scavenger; col. 19, Reaction 1). Hence, the reaction steps of forming 1-O-alkyl-ribose by reaction of a ribose with methanol and protection of the remaining free hydroxyl groups and its coupling to uracil via the silylated derivative and subsequent deprotection of the protecting groups is taught by Gosselin. Even though the reactions above are performed with a ribose, one of ordinary skill in the art will

recognize that the same reaction can be performed with a deoxyribose too. However, Gosselin et al do not teach the conversion of the 1-O-alkyl-ribose to a halide before reacting it with a silylated base.

Weis et al, drawn to preparation of ribofuranosyl nucleosides, teaches the reaction of a silylated base with a ribose sugar that has a chlorine at the 1-position to give the corresponding nucleoside is performed using mild conditions and goes to completion in 2hours (page 14, Scheme IV), whereas the same type of coupling with the ribose sugar having oxygenated leaving group (OAc in this case) takes 16 hours to go to completion (page 9, Scheme II). One of ordinary skill in the art will recognize from this teaching that having a halide at the 1-position speeds up the coupling step with the silylated base.

It is well within the purview of one of ordinary skill in the art to adjust process parameters, ratios of reagents and substitute different solvent(s), reagents, etc., in order to optimize the yield of the desired product. The use of milder acids instead of the strong sulfuric acid is also an obvious variant since both are sources of H^+ needed as a catalyst and a mild acid is preferable.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of the prior art as above in a process for the preparation of a beta-L-2'-deoxythymidine and beta-L-2'-deoxyuridine as instantly claimed, since the process steps and reagents for the desired products is seen to be taught in the prior art using the structurally close ribose sugar.

One of ordinary skill in the art would be motivated to use the process as instantly claimed since the process is mild and step wherein the ribose containing the halide at the 1-position is

coupled to the silylated base is fast compared to the same step wherein the ribose has an oxygenated leaving group. A reaction step that is art tested to be fast and yields the desired product in high yield is preferable. The skill artisan also knows that the reaction sequence performed with a ribose will also work equally well with a deoxy ribose.

Conclusion

Claims 13-20 and 69-85 are rejected

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathy Krishnan whose telephone number is 571-272-0654. The examiner can normally be reached on 8.30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GK

10/4/06

Shaojia Jiang
Supervisory Patent Examiner
Art Unit 1623